REMARKS

The Office Action mailed March 10, 2006 has been carefully considered. Reconsideration in view of the following remarks is respectfully requested.

Claims 1 and 18 have been amended to further particularly point out and distinctly claim subject matter regarded as the invention. Support for these changes may be found in the specification, page 4. The text of claims 2-5, 8-17, and 19-20 is unchanged, but their meaning is changed because they depend from amended claims.

Claims 6-7 have been canceled, without prejudice or disclaimer of the subject matter contained therein.

New claims 21-26 also particularly point out and distinctly claim subject matter regarded as the invention. Support for these claims may be found in the specification, pages 9-10.

In view of the Examiner's earlier restriction requirement, Applicant retains the right to present claims 16-17 in a divisional Application.

A restriction requirement has been imposed by the Examiner and a provisional election was made with traverse to prosecute the invention of claims 1-15 and 18-20 in a telephone conversation with the Examiner on February 13, 2006. That provisional election is hereby confirmed. Since claims 16 and 17 are dependent claims, Applicant expects that should claim 1

be deemed allowable, claims 16 and 17 will also be allowed. Hence, Applicant will not cancel claims 16 and 17 at this time.

On February 13, 2006, an interview was conducted by telephone between Examiner Umez Eronini, Lynette T. and Michael B.K. Lee, Reg. No. 31,846. Applicant thanks the Examiner for granting this interview. The details of the interview are set forth in the Office Action.

Claims 6-8 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was allegedly not described in the specification in such a way as to enable one of ordinary skill in the art to practice the invention. Claims 6-7 have been canceled and claim 8 has been amended to depend directly from claim 1.

Claims 1, 2, 4-7, 13, 14 and 18-20 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Naeem et al.,[1] in view of Hineman et al.,[2] among which claims 1 and 18 are independent claims. This rejection is respectfully traversed.

Neither Naeem nor Hineman nor their combination teach or suggest "a method for etching an inorganic dielectric layer" or "etching the inorganic dielectric layer" as stated in claim 1 as amended or "placing an inorganic dielectric layer to be etched over a substrate" or "etching the layer to be etched with the etch plasma" as stated in claim 18 as amended. Specifically, Naemm describes altering the sputter in the etch from a high sputter to a low sputter prior to the metallization layer being penetrated. Col. 7, lines 4-20. Naemm's concern is the prevention of a high sputter during etching of the metallization layer. Essentially, Naemm wishes to protect the

[1] U.S. Patent No. 5,846,884

metallization layer from the etch that penetrates the ARC layer. Naemm does not teach or suggest trying to protect an inorganic dielectric layer during the etch that penetrates the ARC layer, or any other etch for that matter, despite Naemm clearly teaching a dielectric layer (see FIG. 1B. The presently claimed invention, on the other hand, describes a method for etching an inorganic dielectric layer, which is a process that does not occur in Naemm until long after the inventive process in Naemm is completed. The presently claimed invention acts to protect the dielectric layer, which as described above Naemm is indifferent about.

Hineman teaches halting a first plasma etch process prior to completion of the ARC etch. Hineman accomplishes this, however, by using a pre-selected duration or through the use of a detector that detects when etching of the layer beneath the ARC occurs (see Col. 3, line 56 through Col. 4, line 7). Hineman does not attempt to utilize specialized gases, pressures, or other chamber settings to help reduce or eliminate the erosion of the substrate during the first plasma etch.

As such, Applicant respectfully submits that claims 1 and 18 are in condition for allowance.

Claims 3 and 12 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Naeem et al.,[3] in view of Hineman et al.,[4] and further in view of Chen et al.[5]

Claims 8 and 10 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Naeem et al.,[6] in view of Hineman et al.,[7] further in view of Angelopoulos et al.[8]

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[2] U.S. Patent No. 6,379,872
[3] U.S. Patent No. 5,846,884
[4] U.S. Patent No. 6,379,872
[5] U.S. Patent No. 6,080,662

Notably, the Office Action does not provide a basis for rejecting claim 15. As such, Applicant is unclear whether this was merely an oversight or whether the claim is in allowable form.

Nevertheless, as to dependent claims 2-5, 8-15 and 19-26, these claims are also patentably distinct from the cited references for at least the same reasons as those recited above for the independent claims, upon which they ultimately depend. These dependent claims recite additional limitations that further distinguish these dependent claims from the cited references.

For example, claim 21 indicates that the substrate sits atop a lower electrode providing power of 0-1000 Watts at 27 MHz and 100-1000 Watts at 2 MHz. The references fail to teach this limitation.

Additionally, claim 22 indicates that the temperature within the chamber is between -20 degree and 40 degrees C. The references fail to teach this limitation. Neither Naeem nor Hineman teach or suggest "setting the pressure within said processing chamber at between 200 and 300 mTorr" as claimed in claims 1 and 18 as amended. This pressure range helps to inhibit the ARC open plasma from etching the substrate.

Furthermore, as to claims 25-26, a specific chamber pressure range (200 to 300 mTorr) is provided. In Naeem, there are several layers between the ARC layer and the substrate, specifically, referring to FIG. 1, a bottom barrier 104, a metallization layer 106, a first top barrier 108, and a second top barrier 110. The problem in Naemm is not damage caused to the substrate

[6] U.S. Patent No. 5,846,884

itself, but the difficulty in cleaning the sidewalls that are covered in portions of the inorganic material from the substrate and/or metallization layer. Naeem's solution is to **increase** the sputter when breaking through the organic ARC layer 112, essentially intentionally causing organic materials to spray on the sidewalls. By doing so, when the eventual inorganic material winds up hitting the sidewalls, it is much easier to remove (see Col. 6, lines 14-32). Notably, the pressure range for the break-through stage is provided in Table 1, and even the broadest range (2-10 mTorr) falls outside the 200 to 300 mTorr range of claims 25-26.

Hineman teaches halting a first plasma etch process prior to completion of the ARC etch. Hineman accomplishes this, however, by using a pre-selected duration or through the use of a detector that detects when etching of the layer beneath the ARC occurs (see Col. 3, line 56 through Col. 4, line 7). Hineman does not attempt to utilize specialized gases, pressures, or other chamber settings to help reduce or eliminate the erosion of the substrate during the first plasma etch. While various pressure settings are described (Col. 5, lines 2-23), each of these pressure settings falls outside the 200 to 300 mTorr range of claims 25-26.

Additionally, the combination of Naeem and Hineman would still suffer from the drawback of substrate etching during an ARC etch. The pressure range of claims 1 and 18 as amended aids to reduce or eliminate such etching even if the ARC etch is not stopped in time. Both Naemm and Hineman contain no such safety precautions if the ARC etch is not stopped in time and thus their combination would also suffer from such a significant drawback.

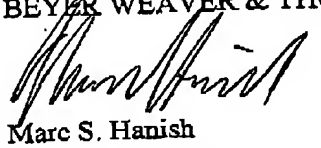
[7] U.S. Patent No. 6,379,872

Conclusion

It is believed that this Amendment places the above-identified patent application into condition for allowance. Early favorable consideration of this Amendment is earnestly solicited.

If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP



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[8] U.S. Patent No. 6,316,167